

kaolin crystals &c., while Huxley definitely called these bodies, and these only, coccoliths. Since the above description of their reproduction settles them finally to be self-contained organisms, there arises the necessity for a true generic and specific name. Here, however, the differentiation of species, if they exist, is not possible, since they are so minute that different illuminations make them appear entirely different in contour and markings. Hence I propose for all the forms hitherto described, recent and fossil, the one name *Coccolithus oceanicus*, mihi.

P.S.—By a strange oversight I missed Carter's paper above referred to till my paper was printed. He considers coccoliths to be the cells of *Melobesia* living separately, and calls the oval and round *cyatholiths* respectively *M. unicellularis* and *M. discus*; but as the *discolith* is undoubtedly the adult form, it does not seem advisable to apply either of these specific names, clearly defined for a definite thing in one stage, to the same thing in another stage.

XLIII.—*Descriptions of some new Neotropical Muridæ.*

By OLDFIELD THOMAS.

THE British Museum has recently received two small collections of rodents from Peru and Venezuela, among which are several new species; and in working these out the opportunity has been taken of re-examining and, where necessary, describing the species contained in the general collection of South-American Muridæ. Among others, the two series from Peru obtained by Messrs. Stolzmann and Jelski, and worked out by me in 1882 and 1884*, have proved to need a considerable amount of revision in their determinations.

The first to be described represents a new genus, and is again the discovery of Mr. J. Kalinowski, the finder of the interesting fish-eating rat described last year †.

NEOTOMYS, gen. nov.

General form much as in *Sigmodon*; ears broad and rounded; fur very thick; tail short; thumb with a nail.

Skull with the nasals much expanded anteriorly; inter-

* P. Z. S. 1882, p. 98, 1884, p. 447.

† P. Z. S. 1893, p. 337.

orbital region very narrow, narrower than the muzzle, its edges square, but not beaded; interparietal bone broad, ribbon-like, its antero-posterior about one third its transverse diameter; walls of infraorbital foramina as in *Sigmodon*, the anterior edge cut back underneath a prominent projecting point; palatine foramina very large, but the dividing septum also very large, nearly filling them up; posterior part of palate with two deep excavations between $\underline{m.2}$ and $\underline{m.3}$, divided by a mesial ridge, and strongly recalling the same part in *Microtus*; pterygoid fossæ broad and shallow. Lower jaw very short and high, but the coronoid processes reduced to low blunt triangular elevations.

Dentition.—Upper incisors extremely broad, smooth, and slightly concave in front so far as the internal five sixths of their surface is concerned, but along their outer edge there is a sharply cut groove or bevel, most visible from the side, whence it suggests the bevelled grooving of *Gerbillus* or *Zapus*; the inner border of the groove forms an anteriorly projecting ridge, internal to which the face of the tooth gradually curves inwards to meet its fellow of the opposite side. (To suppose the inner half of a *Zapus* incisor flattened in front and enormously broadened, while the outer half retains its natural size and position, would give the best idea of these peculiarly grooved incisors.) Molars more like those of *Sigmodon* than of any other Cricetine, but they are even more antero-posteriorly compressed, with the result that the grinding-surfaces somewhat recall those of *Microtus*, with separated enamel loops and islands. On the whole, however, the loops appear to correspond to those of *Sigmodon*, except that $\underline{m.3}$ is more lengthened and there are four projecting angles on its outer side instead of three. Lower incisors broad and flat in front, and curved very rapidly upwards, so as to produce a very short diastema.

The above description will show how widely different this peculiar little animal is from any hitherto described. Both in external and cranial characters it has a curious resemblance to *Otomys*, on which I have based its name. Its long fur, large round ears, anteriorly expanded nasals, and narrow interorbital region are all points in the resemblance, although of course there can be no possible connexion between the two genera. Its really nearest ally is probably *Sigmodon*; but even this is very different in many characters, notably in the general form of the skull and the structure of the incisors. The *Sigmodon*-like *Rhithrodon* described by me in 1880*

* P. Z. S. 1880, p. 691.

shows the grooving of the incisors, different as the details of this are; but the typical and still unique specimen has its molars too worn to say whether they at all approach those of *Neotomys*.

Neotomys ebriosus, sp. n.

Size and general proportions about as in *Rhithrodon pictus*, although the feet and tail are rather shorter. Fur long and straight, the underfur of the back about 13 and the bristle-hairs about 19 millim. long. Ears large, nearly circular in outline, laid forwards they reach just to the back of the eye; well clothed with brownish-fulvous hairs on both surfaces.

General colour, so far as can be made out in a spirit-specimen, grizzled greyish brown (not unlike *Sigmodon hispidus*), the tip and sides of the muzzle bright cinnamon-rufous, a colour which is also present on a few hairs at the base of the ears and on the rump. Belly-hairs plumbeous basally, white terminally. Upper surfaces of feet dirty whitish, with a tinge of cinnamon. Palms and soles quite naked, pads 5-6; fifth hind toe reaching nearly to the end of the first phalanx of the fourth. Claws small and delicate, the anterior smaller than the posterior. Tail rather shorter than the body, bicolor, the upper surface blackish, the sides and lower surface white. Palate with the usual three undivided ridges, then follow two divided ones at the front end of $\frac{m-1}{2}$; but behind these there are no regular ridges, the surface of the palate being smooth, with several irregular and unsymmetrical projections upon it.

Dimensions of the type (an adult male in spirit):—

Head and body 100 millim.; tail 61; hind foot 21·5; ear, from notch, 15·8 by 13·2 broad; forearm and hand 27; heel to front of last foot-pad 10.

Skull: basal length 23·6, basilar length from henselion 21·3, greatest breadth 15·7; nasals, length 12·8, greatest breadth 5·5; breadth between anteorbital fossæ 4; interorbital breadth 3·4; interparietal, length 3·1, breadth 9·4; length of outer wall of infraorbital foramen 2·4; palate, length from henselion 11·9; palatal foramina 5·5; diastema 6·5; length of upper molar series 5·2. Lower jaw: condyle to incisor-tip 17; tip of coronoid to angle 9·8; length of lower molar series 5·6.

Hab. Valley of Vitoc, East Central Peru. Coll. J. Kalinowski.

Type: B.M. 94.10.1.1.

This interesting little animal adds another to the number of South-American small mammals presenting to a greater or

less extent the peculiar and characteristic coloration of a grey or brown body, with red nose, rump, feet, and tail. See below under *Acodon Jelskii*.

Oryzomys Kalinowskii, sp. n.

Size slightly greater than in its ally "*Thomasomys*" *cinereus*. Fur very long and soft, the hairs of the back some 16 millim. in length. General colour finely grizzled brownish grey all over, without special markings anywhere; the hairs of the back dark slate except at their tips, where there is a narrow terminal or subterminal band of dull yellow. These yellowish tips are broader and more prominent on the belly, to which they impart a general dirty fulvous tone. Whiskers long, numerous, whitish. Ears very large, laid forwards in a spirit-specimen they reach in front of the anterior canthus of the eye; almost circular in outline, their anterior edge without a basal prominence; their surface well haired and fringed, with long light-tipped hairs like those of the back on the anterior half of their outer surfaces, and with shorter brownish hairs on their posterior halves internally. Dark colour of body running down on hands and feet to the end of the metapodials mesially, while the sides and the whole of the fingers and toes are silvery white. Palate-ridges 3—5. Fifth hind toe reaching to the end of the first phalanx of the fourth. Soles naked, pads very high and prominent. Tail long, very like that of *Mus rattus*, nearly uniformly black, not pencilled, but well and finely haired throughout, the under surface slightly paler in colour than the upper.

If the immature female mentioned below is the same species as the type, of which I have little doubt, the mammae may be recorded as 1—2=6.

Skull thin and lightly built, smooth and rounded in its general outlines, without cranial or supraorbital ridges. Muzzle long and slender; interorbital region rather narrow, its edges just marked, not absolutely rounded, but quite without beading. Palatal foramina a little longer than the molar series. Pterygoid fossæ shallow, with a large circular foramen in the middle of their posterior half. Lower jaw elongate, of medium strength; coronoid process rather light, hooked backwards.

Incisors smooth, rather narrow. Molars broad, heavy, and rounded, with opposite cusps, as in true *Oryzomys*.

Dimensions of the type (an adult male in spirit):—

Head and body 140 millim.; tail 155; hind foot 32·8; ear 22 × 17; forearm and hand 38; heel to front of last foot-pad 15.

Skull: greatest length 36, basal length 30.6, basilar length 28.7, greatest breadth 18.5; length of nasals 14.7; inter-orbital breadth 5.2; interparietal, length 3.6, breadth 12; palate length to henselion 15.5; palatal foramina 7; diastema 10.6; length of upper molar series 4.9. Lower jaw: condyle to incisor-tip 23.6; coronoid to angle 10; height of ramus below $\frac{m.1}{m.1}$ 4.3.

A second specimen is contained in the collection (an immature female), which I have little hesitation in referring to the same species.

Hab. Valley of Vitoc, East Central Peru. Coll. J. Kalinowski.

Type: B.M. 94.10.1.2.

As in the case of "*Hesperomys cinereus*"*, to which they are undoubtedly nearly allied, I have had great difficulty in assigning this and the next species to their proper genus, as, although Dr. Coues † has attempted to cut the knot by forming for *H. cinereus* a special group, I do not feel satisfied that it is one worthy of retention. Although the addition of the two species now described to the group would seem to support its position as a separate genus or subgenus, yet there seems to be such a gradation from *cinereus* through *Kalinowskii*, *albigularis*, and *meridensis* into typical *Oryzomys*, that I think it better for the present to use the latter name for them all.

Oryzomys incanus, sp. n.

Similar to *O. Kalinowskii* in all essential respects, in colour, proportions, and general skull-characters, but distinguished by its conspicuously smaller size, slenderer muzzle, broader interorbital space, much smaller teeth, and also by the disproportionate slenderness and delicacy of the lower jaw.

Dimensions of a male preserved in spirit:—

Head and body 104 millim.; tail 115; hind foot 25; ear 17 × 14; forearm and hand 29.5; heel to front of last foot-pad 10.7.

Skull: greatest length 30.7, basal length 25, basilar length 23, greatest breadth 14.7; length of nasals 12.6; inter-orbital breadth 5.2; interparietal, length 3, breadth 9.2; palate length to henselion 12.1; palatal foramina 6.1; diastema 8.3; length of upper molar series 4.4. Lower jaw: condyle to incisor-tip 19; coronoid to angle 7; height of ramus below $\frac{m.1}{m.1}$ 2.7.

Hab. Valley of Vitoc, Central Peru. Coll. J. Kalinowski.

Type: B.M. 94.10.1.4.

* P. Z. S. 1882, p. 108.

† Am. Nat. xviii. p. 1275 (1884).

Oryzomys meridensis, sp. n.

Size moderately large. Fur thick, of medium length, the hairs on the back about 11 millim. long. General colour dark rufous, heavily lined with blackish, especially along the median line of the back, while the head is more brown than rufous. Sides clearer and brighter rufous. Chest pure white, the hairs white to the base; sides of muzzle, chin, and belly grey-mixed white; line of demarcation on sides well-marked. Ears very large, thinly clothed with dark brown hairs; anterior edge without projection. Palate-ridges 3—5. Hands and feet very thinly haired, whitish; fifth hind toe reaching nearly to the end of the first phalanx of the fourth. Tail long, thinly hairy, brown, rather paler below.

Skull strong, with widely expanded zygomata; nasals long, well-expanded anteriorly; interorbital region long, flattened above, but quite rounded and without beads laterally; anterior palatine foramina rather short, although not so short as in *O. albigularis*.

Dimensions of the type (an adult skin):—

Head and body 139 millim.; tail 143; hind foot (moistened) 30·7; ear (shrunk) 21; heel to front of last foot-pad 14·2.

Skull: tip of nasals to back of interparietal 34·5, greatest breadth 18·7; nasals, length 13·6, breadth 4; interorbital breadth 5·4; interparietal, length 3·4, breadth 10; outer wall of infraorbital foramen, length 4; palate length to henselion 15; diastema 9·5; palatal foramina 5·9; upper molar series 5·5. Lower jaw: condyle to incisor-tip 23·5; height of ramus below $\overline{m.1}$ 5.

Hab. Merida, Venezuela. Coll. A. Mocquerys, April 1894.

Type: B.M. 94.9.25.13.

This species seems to be allied to *O. albigularis*, Tomes, by its general coloration, short palatine foramina, and rounded supraorbital edges, but it differs conspicuously by its very much larger ears.

It may also be related to *O. velutinus*, All. & Chapm., but is distinguished by its larger size, heavier teeth, and longer fur.

Oryzomys flavicans, sp. n.

Size rather small, build rather Myoxine. Fur long, straight, and close, hairs of the back about 13 millim. long. General colour rich fulvous, lined with brown on the back, clearer and more yellowish (approximately ochraceous buff of Ridgway)

on the sides, along which from cheeks to rump there is a fairly marked line of this colour. Under surface pale yellowish buff, whiter on the chest; belly-hairs slaty grey only at their extreme bases. Ears rather small, their substance brown, but their thickly set hairs fulvous. Upper surface of hands and feet dull whitish buff; fifth hind toe, without claw, reaching to the end of the first phalanx of the fourth. Tail thinly haired, brown, rather paler beneath, especially proximally.

Skull broad and rather flattened, strongly made; muzzle short and broad; interorbital region broad, flattened, with marked supraorbital ledges overhanging the orbits and running back as well-marked ridges to the back of the parietals. Palatine foramina short, of moderate breadth.

Dimensions of the type (an adult male in skin):—

Head and body 116 millim.; tail 129; hind foot (moistened) 23·8; ear (shrunk) 14·5; heel to front of last foot-pad 10.

Skull: tip of nasals to front of interparietal 26; greatest breadth (c.) 16·5; nasals, length 11, breadth 3·5; interorbital breadth 5·2; interparietal, length 4·1, breadth 10·2; length of outer wall of infraorbital foramen 3·1; palate length from henselion 13; diastema 7·7; palatal foramina 4·8 × 2·1; upper molar series 4·8. Lower jaw: condyle to incisor-tip 18·8; height of ramus below $\frac{m_1}{m_1}$ 4·5.

Hab. Merida, Venezuela. Coll. A. Mocquerys, April 1894.

Type: B.M. 94.9.25.14.

Although this species seems allied to the Trinidad *O. speciosus* and *trinitatis*, All. & Chapm., there are too many differences in the detailed skull measurements for it to be assigned to either of them.

Oryzomys ferrugineus, sp. n.

Size rather large. Fur thick and straight, the hairs of the back about 11 millim. in length. General hue a brilliant rust-colour (near "orange-rufous" of Ridgway) all over the head and upper surface, in brilliancy far exceeding any other species known to me, and even killing the colour of *Neotoma ferruginea*. The head and centre of the back are somewhat lined with black, but the cheeks and sides are quite clear and bright. Under surface white, with a decided wash of yellowish on the belly; no slate-colour at the bases of the hairs; line of demarcation on sides sharply defined. Upper lip rust-coloured like the rest. Eyes without a dark ring, the blackness of the lids reduced to a minimum; but a blackish spot present

at the roots of the whiskers, just in front of the anterior canthus of the eye. Ears rather small, well-clothed, wholly rust-coloured; but there are a few whitish hairs just behind their posterior bases. Upper surface of hands pale reddish brown, the rusty of the forearm gradually passing into the brown; on the hind limbs the rusty goes down to and covers the ankles, and passes along the outer side of the foot nearly to the base of the fourth toe; inwards of this there is a broad whitish patch covering the metatarsals of the first three digits, and beyond this again the basal phalanges of the digits are dark brown all across the foot, while the terminal ones are whitish; fifth hind toe long, reaching almost to the middle of the second phalanx of the fourth. Tail very long, thinly haired, uniformly dark brown. Mammæ 2—2=8.

Skull long, rather narrow, with well-defined beaded but not overhanging supraorbital edges; interparietal large; palatal foramina long and open. Molars broad, rounded, their cusps unusually high and prominent, not apparently wearing flat with age.

Dimensions of the type (a well-made skin):—

Head and body 148 millim.; tail 187; hind foot (moistened) 32·5; ear (moistened) 17 × 14.

Skull: lambda (front of interparietal) to nasal tip 32, greatest breadth 19; nasals 14 × 4·3; interorbital breadth 5; interparietal (in another rather larger specimen), length 5·2, breadth (c.) 11·5; length of outer wall of infraorbital foramen 3; palate length from henselion 15·1; diastema 9·3; palatal foramina 7·8 × 2·9; length of upper molar series 5·9. Lower jaw: condyle to incisor-tip 22; height of ramus below $\frac{m}{1}$ 5.

Hab. Rio Janeiro.

Type: B.M. 76.12.8.3.

Of this very handsome species the Museum possesses three specimens, and as these came from three different dealers at different times, there are probably many others in the various European museums. One of the specimens came with the alternative names of *Mus vulpinus*, Brants*, and *M. leucogaster*, Brandt†, and the next with that of *M. cinnamomeus*, Pictet‡. The hind foot of the new species being, with the claws, 1 inch 3 lines French measure in all three specimens, it is clear that "*Mus vulpinus*," with a hind foot of over 2 inches, and *M. leucogaster*, with one of 1 in. 7 lin., are both too large, just as *M. cinnamomeus*, with one of 1 in. 0 lin., is too small. *M. leucogaster* is "*e flavo fuscus*," and has its "cauda

* Het Gesl. der Muizen, p. 137 (1827).

† Mém. Ac. Pétersb. (6) iii. pt. 2, p. 428 (1835).

‡ Anim. Nouv. Mus. Genève. p. 64 (1841).

in individuo exsiccato albida, in vivo carnea." *M. cinnamomeus* has a "teinte générale jaune" and a tail only 121 millim. long.

Of other species the nearest seems to be *Hesperomys ruscatus*, Wagn.*, but this has "cauda corpore paululum brevior, . . . pallida" and "pedibus albidis." *Mus physodes*, Licht.†, which our specimens had been formerly supposed to be, proved, on a personal examination of the type in the Berlin Museum, to be quite a different animal, coloured more like *Oryzomys laticeps*, Lund. One other species needs mention, namely *Mus vulpinus*, Lund ‡, nec Brants, on which *M. vulpinoides*, Schinz §, and *Calomys laticeps*, Winge ||, nec Lund, are based; but this is shown by Winge's admirable figures to be again more nearly allied to the true *O. laticeps* than to the animal before us.

Oryzomys xanthæolus, sp. n.

Size and general characters of *O. galapagoensis*, Waterh., to which I had previously assigned it. Fur harsher and shorter than in that species, the hairs on the back about 10 or 11 millim. in length. General colour coarsely grizzled yellow and black, the mixture approximating to tawny olive of Ridgway. Cheeks and sides clearer yellow, or rather buff. Under surface white, the slate-coloured bases of the hairs scarcely showing through; line of demarcation on sides well defined. Eyes with a rather lighter ring surrounding them. Ears large, their substance apparently brown, thinly clothed with yellowish hairs. Hands and feet very thinly haired, almost naked, their few scattered hairs white; fifth hind toe (without claw) reaching to the middle of the first phalanx of the fourth. Tail very long, thinly haired, brown above and whitish below.

Skull with a short broad muzzle, sharply edged and beaded supraorbital margins, and medium palatal foramina, about equal in length to the upper molar series.

* Abh. Ak. Münch. v. p. 312 (1850).

† Darst. Säug. pl. xxxiv. (1827-34).

‡ Blik Bras. Dyrev. pt. iv. p. 63 (1842).

§ Syn. Mamm. ii. p. 193 (1845).

|| Rodents of Lagoa Santa (E Mus. Lundii), 1887, p. 143. Dr. Winge, with sublime disregard of the nomenclature rules which other people find it necessary to obey, has shifted the name *laticeps* from the species to which Lund gave it (dubbing that *saltator*), and assigned it to the form which Lund had called *vulpinus*. The change is, of course, perfectly invalid, and cannot be recognized by any one who acknowledges the principle of priority.

Dimensions of the type (a skin) :—

Head and body 121 millim. ; tail 139 * ; hind foot 30 ; ear from notch 18·5.

Skull: front of interparietal to nasal tip 23·3, greatest breadth 16 ; nasals 12·7 × 4 ; interorbital breadth 5·1 ; length of outer wall of infraorbital foramen 3·4 ; palate length from henselion 13·4 ; diastema 8 ; palatal foramina 5·5 × 2·5 ; length of upper molar series 5. Lower jaw : condyle to incisor-tip 20 ; height of ramus below $\frac{m.1}{m.1}$ 4·4.

Hab. Tumbes, N. Peru. Coll. Dr. J. Stolzmann.

Type: B.M. 85.4.1.47.

This species is undoubtedly very nearly allied to *O. galapagoensis*, but may be distinguished by its yellowish instead of brownish colour, its shorter fur, and longer tail. One would also expect, almost as a matter of course, that the insular form of the Galapagos Islands would be specifically distinguishable from that of the mainland.

Oryzomys phæopus, sp. n.

General appearance somewhat of the *O. laticeps* type, but size smaller and tail shorter. Fur straight and rather harsh, about 11 millim. in length on the back. Colour above coarsely grizzled fulvous and black, the general tone near Ridgway's "vandyke-brown," scarcely paler or clearer on sides. Whole of under surface dirty buff, the hairs pale plumbeous basally, dull buff terminally ; line of demarcation not sharply defined. It may be noted that the colour above exactly matches the cheeks, and below, the belly, of a July example of the English water-vole. Ears short, thinly haired, scarcely darker than the general colour of the head. Upper surfaces of metacarpals and metatarsals well clothed with dark brown hairs ; digits more thinly clothed and rather paler. Tail comparatively short, very finely haired, in fact almost naked ; brown above, paler below, but the difference not conspicuous.

Skull somewhat like that of *O. laticeps*, but smaller and with a shorter muzzle. Interorbital region convex, broad, its edges with a fine supraorbital bead. Palatine foramina just about the length of the upper molar series. Coronoid processes of lower jaw long, well hooked backwards.

Dimensions of the type (a male in skin) :—

Head and body 112 millim. ; tail 98 ; hind foot (moistened) 24 ; ear (shrunk) 14 ; heel to front of last foot-pad 11·5.

* Imperfect at tip ; the tail of another specimen is of about the same length as that here given.

Skull: back of interparietal to nasal tip 28·6, greatest breadth 15; nasals $12 \times 3\cdot6$; interorbital breadth 5·5; interparietal $2\cdot7 \times$ (c.) 8; length of outer wall of infraorbital foramen 3; palate length from henselion 13·2; diastema 7·7; palatine foramina $4\cdot8 \times 2\cdot1$; upper molar series 4·6. Lower jaw: condyle to incisor-tip 18·5; height of ramus below $\frac{m.1}{m.1}$ 4·1.

Hab. Pallatanga, Ecuador. Coll. L. Fraser.

Type: B.M. 59.11.1.9.

This species is based on a specimen marked in Mr. Tomes's handwriting "*Hesperomys arvicoloides*, Pictet," and is therefore evidently not his own *H. caliginosus*, with whose description externally it somewhat agrees. There are also, as Mr. Allen has pointed out*, other reasons for thinking *H. caliginosus* to have been an *Acodon*, an opinion on which I based my original determination of the specimens in Messrs. Stolzmann and Jelski's collections.

Pictet's *arvicoloides*, although withdrawn by its author in favour of *Rengeri*, Waterh., might have to stand for Bahian examples of the *olivaceus* group; but in no case has it anything to do with the present species.

Oryzomys phaeopus obscurior, subsp. n.

Similar to the typical variety in most essential respects, but the feet are shorter and more delicate, and the colour is much darker throughout, especially on the posterior back, where the fur is practically black, only relieved by a few yellow-tipped hairs. Upper surface of hands and feet, and tail, both above and below, brownish black. Fifth hind toe only reaching to the base of the first phalanx of the fourth.

The muzzle of the skull is even shorter than in the typical form; but this may be due to the fact that the type of *phaeopus* is a very aged specimen, while that of *obscurior* is only just adult.

Dimensions of the type (in skin):—

Head and body 111 millim.; tail (imperfect at tip) 89+?; hind foot (moistened) 22·4; heel to front of last foot-pad 9·5.

Skull: bregma (back corner of frontals) to nasal tip 19; greatest breadth (c.) 15; nasals $10\cdot5 \times 3\cdot4$; interorbital breadth 5·9; palate length from henselion 12·2; diastema 7·4; palatine foramina $4\cdot5 \times 2\cdot1$; upper molar series 4·5. Lower jaw: condyle to incisor-tip 18; height of ramus below $\frac{m.1}{m.1}$ 3·7.

Hab. Concordia, Medellin, Colombia. Coll. J. K. Salmon.

Type: B.M. 73.11.5.5.

* Bull. Am. Mus. N. H. iii. p. 210 (1891).

Oryzomys Stolzmanni, sp. n.*Hesperomys longicaudatus*, Thos. P. Z. S. 1882, p. 104 (nec Benn.).

In size and proportions clearly belonging to the *O. longicaudatus* group. Fur of medium length, rather close and stiff. General colour dark rufous brown, finely lined with black, the resulting tone approximately similar to "Prout's brown" of Ridgway. Head greyer and less rufous. Ears rather small, laid forwards in a spirit-specimen they reach just to the middle of the eye; brown, finely mixed with rufous, not prominently darker than the general colour. Palate-ridges 3—5. Chin white; chest and belly dull buffy yellow, the bases of the hairs slate. Upper surface of hands and feet white; fifth hind toe, without claw, reaching to the end of the first phalanx of the fourth. Tail very long, finely haired, uniformly dark brown throughout, or the underside faintly paler. Mammæ 2—2=8.

Skull very much as in *O. longicaudatus*, but the edges of the interorbital region seem to be rather more evenly concave and the palatal foramina are shorter, not reaching to the level of the front of $\frac{m.1}{m.1}$.

Dimensions of the type (measured as a spirit-specimen in 1882):—

Head and body 82 millim.; tail (from anus) 137; hind foot 22·5; ear (of a specimen now in spirit) 12 × 10; forearm and hand 25.

Skull: greatest length 25·5, basilar length 19; nasals 9·2 × 2·8; interorbital breadth 3·7; interparietal 3 × 9; palate length from henselion 10·1; diastema 6·4; palatal foramina 4·3 × 1·5; length of upper molar series 3·5. Lower jaw: condyle to incisor-tip 14·3; coronoid to angle 6·4; height of ramus below $\frac{m.1}{m.1}$ 3.

Hab. Huambo, N. Peru, 3700 feet. Coll. Dr. J. Stolzmann, April 1880.

Type: Specimen *b* of the list given, P. Z. S. 1882, p. 104. B.M. S1.9.7.11.

This species is distinguishable from typical *O. longicaudatus* by its darker back, buff-coloured belly, and shorter feet. Tomes's description of *Hesperomys minutus* from Pallatanga, Ecuador, based on a young specimen, would have prevented my giving a name to this mouse had it not been that the Museum possesses an adult from the same place which agrees sufficiently well with that description to be in all probability the same species. This animal differs from *O. Stolzmanni* by its much more rufous coloration, above and below, and by the almost complete suppression of the projecting plate of the anterior zygoma-root.

Oryzomys gracilis, sp. n.

Size small, form very slender and delicate. Fur short and velvety, the hairs of the back only about 4 millim. in length. General colour finely grizzled yellowish brown, perhaps nearest to Ridgway's "raw umber;" the hair-tips dull yellow, mixed with the blackish longer hairs. Sides clearer and more fawn-coloured, especially along the edge of the white belly-hairs. Whole of under surface white, the bases of the hairs slate, line of demarcation on sides fairly well defined. Ears short, thinly haired, except on the anterior half of their outer surfaces, where they are closely covered with fine shining black hairs, which contrast markedly with the general hue of the upper surface. Uppersides of hands and feet thinly haired, white, probably flesh-coloured in life; fifth hind toe, without claw, reaching nearly to the middle of the first phalanx of the fourth. Tail slender, thinly haired, brown above and white below proximally, the lower surface darkening distally until the terminal fourth of the tail is uniform brown all round.

Skull with narrow parallel-sided nasals, sharply square supraorbital edges, with a very faint trace of beading. Palatal foramina rounded, open, rather longer than the molar series. Molars narrow, delicate, but distinctly *Oryzomys*-like in character.

Dimensions of an adult female skin:—

Head and body 106 millim.; tail 105; hind foot 24·6; ear 13.

Skull: tip of nasals to front corner of interparietal 23·6; nasals, length 10·4, breadth 2·5; interorbital breadth 5; length of outer wall of anteorbital foramen 2·5; diastema 6·3; palatal foramina 4·5; length of upper molar series 3·8. Lower jaw: condyle to incisor-tip 15·5; height of ramus below $\frac{m.1}{m.1}$ 3·3.

Hab. Concordia, Medellin, Colombia. Coll. J. K. Salmon.

Type: B.M. No. 73.11.5.4.

This species may be readily distinguished from its allies by its graceful form, small black ears, slender feet and tail, and narrow, delicately built nasal region.

Oryzomys microtinus, sp. n.

Size rather small; form more or less Arvicoline. Fur rather short, straight and harsh, the hairs of the back about 10 millim. in length. General colour coarsely grizzled brown, the hairs dark slate proximally, with dull yellow tips; many black-tipped hairs intermixed. As a result the colour is not unlike that of some of the darker voles, say *Microtus agrestis* or

riparius, although not so finely grizzled as in the latter. Below, the yellowish tips to the hairs gradually become dirty white, the slaty-grey bases of the hairs still showing through. Palate-ridges 3—5. Ears of medium length, almost naked, their anterior prominence little developed. Upper surface of hands and feet dull whitish brown; fifth hind toe, without claw, reaching just beyond the base of the fourth; pads small, rounded, distinct. Tail short, tapering, nearly naked; its upper surface brown, its lower very slightly paler. Mammæ 2—2=8.

Skull thick and strongly built; nasals long, parallel-sided; supraorbital edges strongly diverging, sharply edged, with a fine bead along them; interparietal of moderate size; outer wall of anteorbital foramen long, convex forwards; palatine foramina unusually large and open, the breadth across both of them almost half their length. Molars small, but very much worn down in the type.

Dimensions of an aged female in spirit:—

Head and body 115 millim.; tail 84; hind foot 24.5; ear 16 × 13; forearm and hand 28; heel to front of last foot-pad 11.

Skull: greatest length 29.7, basal length 24.8, basilar length 23, greatest breadth 16; nasals, length 13, greatest breadth 3.7; interorbital breadth 4.7; interparietal, length 2.3, breadth 8.5; palatal length from henselion 12.6; diastema 8.1; palatine foramina, length 6.3, breadth 3; length of upper molar series (c.) 4.1. Lower jaw: condyle to incisor-tip 19.6; height of ramus below $\frac{m.1}{m.1}$ 4.5.

Hab. Surinam. Coll. E. Bartlett.

Type: B.M. No. 66.8.11.16.

This is one of the species which make the subdivision of the group into genera so difficult. In all its characters except the shortness of its tail it is a true *Oryzomys*; but in this respect it approaches *Acodon*, especially through such species as *A. punctulatus*, which has beaded supraorbital edges. However, in view of its general skull-structure, it seems best for the present to call it an *Oryzomys*, directing attention at the same time to its Acodont external proportions.

Oryzomys (?) *venustus*, sp. n.

Size small, tail short; ears rather large. Fur very long, soft and fine; on the back the hairs are about 13 millim. in length. General colour soft drab (*Ridgway*) on the back, lightening to sandy buff on the sides, the tips of the hairs being buff finely lined with blackish. Face like sides.

Under surface pale buffy white, the hairs slaty blue for three fourths their length, buffy white at their tips; chin-hairs without slaty bases; line of demarcation on sides not sharply defined. Ears rather large, almost approximating to the species of *Phyllotis*, their visible parts when folded thinly hairy, brown; at their anterior bases a tuft of buff-tipped hairs. Hands and feet well-haired, white; fifth hind toe short, not or scarcely reaching to the base of the fourth. Tail short, about the length of the body without the head, well-haired, but not tufted; distinctly bicolor, brown above, white on the sides and below.

Skull, in proportion to its size, strongly built; muzzle broad; interorbital region flat, its edges sharply marked and angular, slightly overhanging the orbits posteriorly. Anterior palatine foramina long, extending backwards to the level of the middle prominence of $\frac{m.1}{1}$.

Dimensions of the type (an aged male in skin):—

Head and body 94 millim.; tail 72; hind foot (moistened) 21; ear (shrunk) 16; heel to front of last foot-pad 8.9.

Skull: lambda (front of interparietal) to nasal tip 23.5, greatest breadth 14.5; nasals 10.5 × 3.1; interorbital breadth 4.5; length of outer wall of infraorbital foramen 3.1; palate length from henselion 11.6; diastema 6.7; anterior palatine foramina 5.7 × 1.8; length of upper molar series 4.3. Lower jaw: condyle to incisor-tip 17; height of ramus below $\frac{m.1}{1}$ 3.9.

Hab. Cosquin, Cordova, Argentina. Coll. E. W. White, Sept. 10, 1882.

Type: B.M. 83.4.16.1.

This pretty little species, although by its skull apparently an *Oryzomys*, much resembles externally a diminutive *Phyllotis* both in general coloration, character of fur, and size of ears; but I know no species of that or any other group with which it could be confounded.

Acodon * *Jelskii*, sp. n.

Hesperomys (Habrothrix) scalops, Gay, Thomas, P. Z. S. 1884, p. 455, pl. xliii. fig. 1 (animal), pl. xliv. figs. 1, 15, and 16 (palate and skull); nec Gay.

Since the above determination was published the discovery of several other species with more or less the peculiar coloration of this animal, as shown in the plate quoted, has so much reduced the relative importance of this by itself as a specific characteristic, that I feel no longer able to ignore the differ-

* Meyen, 1833.—Syn. *Habrothrix*, Waterh. 1837.

ences between M. Jelski's Peruvian specimens and Gay's description merely in consideration of their similarity in colour.

The Peruvian species having been fully described, I need only now point out that it differs from Gay's Central Chilian one by its much longer tail, the body-length being less, and by its longer palatine foramina, Gay's figure showing these but little longer than the molar series, while in *A. Jelskii* they are almost twice as long (see body and skull measurements, *l. c.*). Besides these differences there may be many others, as Gay's description, although not very short, deals chiefly with characters which are of generic or family rather than specific value.

Hab. Junin, Central Peru. Coll. C. Jelski, 1872.

Type: the figured skin, B.M. No. 85.4.1.44.

Acodon Jelskii pyrrhotis, subsp. n.

Hesperomys (Habrothrix) scalops, Thos. *l. c.* partim (specimens *h* and *i*, from Maraynioc).

While the Junin specimens of *A. Jelskii* (see above) all precisely agree with the type specimen figured in the original paper in having their ears only partly rufous, the outer surface especially being greyish brown, in having their tails dark brown above (at least terminally) and pale rufous yellow laterally and below, and in having their digits whitish as compared to the rich rufous metapodials, the Maraynioc ones have the whole of their ears, inside and outside, the whole of their tails, above and below, and the whole of their feet, metatarsals and phalanges, uniform rich chestnut-rufous. These differences appear to be of sufficient importance and constancy to demand recognition by name, at least sub-specifically.

Dimensions as given for specimen *h* (*l. c.*).

Hab. Maraynioc, Central Peru. Coll. C. Jelski.

Type: Specimen *i*, which has now been skinned out of spirit. B.M. 94.10.7.4.

Acodon punctulatus, sp. n.

Size about the same as *A. Jelskii*. Fur much shorter and crisper than is usual in *Acodon*, that of the back about 7 millim. in length. General colour finely punctulated grey and yellow, the resulting tone on the back when viewed from a distance not far from Ridgway's "raw umber," greyest on the anterior back, and lightening on the cheeks, sides of neck, flanks, and sides of rump to "tawny olive," or perhaps rather more

rufous than that, especially on the last-named part. Throughout the colour is made up of a finely grizzled mixture of grey, black, and yellowish in varying proportions. Head concolorous with back. Under surface dirty yellowish white, the bases of the hairs slate-coloured. Ears small, well-haired, brown, with a slight admixture of yellowish. Upper surface of hands and feet brownish white. Fifth hind toe short, barely reaching to the base of the fourth. Tail short, dark brown above, dirty fulvous below.

Skull evenly convex above in profile, with a short muzzle and long narrow brain-case. Supraorbital edges sharply beaded, even slightly overhanging, and forming slight angular postorbital processes. Interparietal small. Palatal foramina long, nearly twice the length of the molar series. Molars apparently of normal *Acodon* structure, but too much worn in the type for accurate description.

Dimensions of the typical skin:—

Head and body (stretched) 132 millim.; tail 71; hind foot (moistened) 22; ear (dried) 14.

Skull: length from just above foramen magnum to tip of nasals 29.6; greatest breadth (c.) 15; nasals, length 10.5; interorbital breadth 4.8; interparietal, length 2, breadth 5.5; outer wall of foramen magnum 3.4; diastema 8.5; length of palatal foramina 7; upper molar series 4.2.

Hab. Ecuador (probably Pallatanga). Coll. L. Fraser.

Type: B.M. No. 59.11.1.8.

This peculiar-looking species is of somewhat doubtful position, as its comparatively short crisp fur and, especially, its beaded supraorbital edges separate it widely from any other *Acodon*. In fact I think it is nearly certain hereafter to require generic or subgeneric separation; but this can only be done when our knowledge of the whole group is much further advanced than it is at present. It is, however, possible that, in company with some other beaded species which have been referred to *Acodon* on account of their external proportions, such as *A. lasiurus*, Lund, *A. punctulatus* should properly be placed in *Oryzomys*, of which it and they would then form a special group of short-tailed species.

Acodon macronyx, sp. n.

Similar to *A. megalonyx*, Waterh., in size, general proportions, and especially in the enormous development of the claws. It differs however, by its much more greyish general colour, which matches Ridgway's "hair-brown," more whitish under surface, and by its shorter, broader, heavier,

and more rounded skull. Palatal foramina extending back to the level of the anterior inner notch of $\overline{m.1}$.

Ears short, hairy, similar in colour to the rest of the upper surface.

Hind feet short and broad, the six pads large, rounded, and prominent; fifth hind toe reaching, without claw, to the middle of the short first phalanx of the fourth. In the type the claws are so much worn down that their present length does not show their unusual dimensions; but in a second specimen, somewhat younger, the middle anterior claw measures 6.2 millim. in a straight line.

Dimensions of the type (an aged female in skin) :—

Head and body (c.) 118 millim.; tail (c.) 47; hind foot (moistened), without claw 22, with claw 24.5; heel to front of last foot-pad 10.

Skull: greatest length 30, basal length 25.8, basilar length 24.2, greatest breadth 16.3; nasals 12.5 × 4; interorbital breadth 5; interparietal, length 1.4, breadth 4.2; length of outer wall of infraorbital foramen 2.8; palate length from henselion 13; diastema 7.8; palatal foramina 6.6 × 1.7; length of upper molar series 5.1. Lower jaw: condyle to incisor-tip 20; coronoid to angle 8.5; height of ramus below $\overline{m.1}$ 4.3.

Hab. East side of the Andes, near Fort San Rafael, Province of Mendoza. Coll. T. Bridges.

Type: B.M. 60.1.5.14.

Of this group of long-clawed *Acodons* two other species have been described, both by Philippi, namely "*Oxymycterus*" *valdivianus* * and *O. niger* †; but both are from the Chilian side of the Andes, and both are said to be darker in colour than *A. megalonyx*, while *A. macronyx* is conspicuously lighter.

Acodon mollis, sp. n.

Hesperomys olivaceus, Thos. P. Z. S. 1882, p. 110, and 1884, p. 456 (nec Waterh.).

Closely similar in almost every respect to *A. olivaceus*, Waterh. Size and colour identical. Tail decidedly longer, but coloured and clothed quite similarly. Fifth hind toe, without claw, reaching to the middle of the first phalanx of the fourth. Palate-ridges 3—4.

Skull readily distinguishable by its much broader interorbital space, which, being broader instead of narrower than the muzzle, gives quite a different appearance to the general

* Arch. f. Nat. 1858, i. p. 303.

† Zeitschr. ges. Naturwiss. (9) vi. p. 445 (1872).

contour of the skull. Supraorbital edges rounded. Palatine foramina reaching to the middle internal prominence of $\frac{m.1}{m.1}$.

Dimensions of the type (a skin):—

Head and body (c.) 110 millim.; tail 85.

Of an old male in spirit from the same locality:—

Head and body 95; tail 75; hind foot 22; ear from notch 15.3×13 ; heel to front of last foot-pad 9.5.

Skull (of the spirit-specimen): greatest length 27, basal length 24.2, basilar length 22.5, greatest breadth 14; nasals 9.3×3.6 ; interorbital breadth 5.1; interparietal 1.5×6.6 ; palate length to hensenion 12; diastema 7.6; palatal foramina 6×2.4 ; length of upper molar series 4.2. Lower jaw: condyle to incisor-tip 17.6; tip of coronoid to angle 7; height of ramus below $\frac{m.1}{m.1}$ 3.6.

Hab. Tumbes, N. Peru. Coll. Dr. J. Stolzmann. There are also specimens in the Museum collection from Maraynioc (*Jelski*) and Vitoc (*Kalinowski*).

Type: B.M. No. 85.4.1.49.

This species is evidently the northern representative of *A. olivaceus*, which ranges over Bolivia, Chili, and Patagonia, and which it replaces in Ecuador and Peru. In distinguishing the two, I have examined six skulls of the northern and ten of the southern form.

Peromyscus * *leucurus*, sp. n.

Size large, slightly less than that of *P. mexicanus* or *P. californicus*. Fur soft and close, the hairs on the back 7 or 8 millim. in length. General colour cinereous grey, finely lined on the back with blackish, clearer on the sides, where it is approximately "drab-grey" of Ridgway. Chin white, rest of under surface "grey no. 8;" the bases of the hairs slate, the tips white. Eyes without any prominent dark ring round them, although the extreme edges of the lids are, as usual, black. Ears large, but not so large as in *P. Truei* or *P. californicus*, finely hairy, blackish brown. Hands and feet white; fifth hind toe, as in most other *Peromysci*, reaching to the middle of the second phalanx of the fourth. Tail long, more thinly haired than usual; brown above and whitish below for the proximal, wholly white all round for the distal half; a few hairs at the extreme tip are, however, brown.

Skull, for a *Peromyscus*, strong and well built, most similar in its proportions, of those available for comparison, to that

* Gloger, 1841.—Syn. *Sitomys*, Fitz. 1867. An analysis of Gloger's generic names is now in course of preparation, and will be published shortly.

of *P. aztecus*, De Sauss. It is, however, larger, with more strongly developed supraorbital edges, narrower posterior nares, and longer pterygoid processes. Molars strictly as in *Peromyscus*.

Dimensions of the type (a well-made skin, male):—

Head and body 118 millim.; tail 142; hind foot 25·5 (with claws 26·5); ear from notch 17·5.

Skull: greatest length 30·3, greatest breadth 15; nasals, length 11·2, breadth 3·4; interorbital breadth 5·1; interparietal, length 3·9, breadth 10; palate length from hensenion 11·9; diastema 7·6; palatal foramina 5·8 × 2·4; length of upper molar series 4·5. Lower jaw: condyle to incisor-tip 18·2; coronoid to angle 7·4; height of ramus below $\frac{m.1}{m.1}$ 3·7.

Hab. Tehuantepec (*A. Boucard*).

Type: B M. No. 79.1.6.3.

This species is founded on the Tehuantepec specimen referred by Alston in the 'Biologia' * to "*Hesperomys californicus*." It differs from that species by its smaller size, smaller ears, much paler colouring, and more thinly haired tail. It is perhaps most nearly related to the *P. Truei*-group, of which it may be said to be a large small-eared member.

Mr. Allen's *Peromyscus nudipes* † from Costa Rica is decidedly larger and more darkly coloured than *P. leucurus*, while no other described Central-American species attains its size.

Peromyscus gymnotis, sp. n.

Size medium; ears long, tail short. General colour, so far as can be made out in a spirit-specimen, very dark, almost bistre-brown. Under surface dirty buff, the slate-coloured bases of the hairs showing through. Ears long, laid forward in a spirit-specimen they reach 3 or 4 millim. in front of the anterior canthus of the eye; perfectly naked, no hairs being discernible upon them (except at their bases posteriorly) even with a lens ‡; their substance plumbeous in colour. Palate-ridges 3—5. Hands and feet thinly covered with fine silvery-white hairs; fifth hind toe reaching to the base of the second phalanx of the fourth; soles practically naked along median line, a few scattered white hairs being only found on this

* Mamm. p. 146 (1880).

† Bull. Am. Mus. N. H. iii. p. 213 (1891).

‡ A second examination with a more powerful lens shows that there are a few widely scattered minute whitish hairs on the ears, but they are so few and so small as practically not to affect the statement in the text.

part. Tail slightly shorter than the head and body, slender, very thinly clothed with minute brown hairs, which are everywhere of the same colour, while the skin of the tail itself is also dark brown above and below for its whole length.

Skull, as compared to that of *P. aztecus*, decidedly more lightly built and flatter above when viewed in profile; muzzle longer and narrower; supraorbital edges square but not beaded; palatal foramina widely open; bullæ rather smaller.

Dimensions of the type (an adult male in spirit):—

Head and body 99 millim.; tail 92; hind foot 22 (with claws 23); ear 17×13.5 ; heel to front of last foot-pad 10.

Skull: greatest length 30.5, basal length 25, basilar length to henselion 23.1, greatest breadth 15.4; nasals 12×3.3 ; interorbital breadth 4.6; interparietal 3.7×10 ; palate length from henselion 12.4; diastema 8.2; palatine foramina 5.8×2.3 ; upper molar series 4.1. Lower jaw: condyle to incisor-tip 18; coronoid to angle 7.3; vertical height of ramus below $\frac{m.1}{m.1}$ 3.6.

Hab. Guatemala. Coll. Bernoulli.

Type: B.M. 86.5.13.4.

The only species that I know of related to this peculiar dark-coloured short-tailed *Peromyscus* are two in the Museum collection from "S. Mexico," Coll. Sallé. One is, however, larger and the other smaller than *P. gymnotis*, and both have more or less bicolor tails and hairy ears. These two species are, I believe, both undescribed; but, in view of the fact that their exact locality is not known and that there is reason to hope for a proper American revision of the Mexican *Peromysci*, based on Mr. Nelson's magnificent collections, I prefer to refrain from describing them.

XLIV.—*Natural History Notes from H.M. Indian Marine Survey Steamer 'Investigator,' Commander C. F. Oldham, R.N.—Series II., No. 10. Report upon some Mollusca dredged in the Bay of Bengal and the Arabian Sea.—Appendix.* By EDGAR A. SMITH.

SINCE the publication of the above report in the September number of the 'Annals' I have received from Mr. Alcock, the Superintendent of the Indian Museum at Calcutta, two species of Mollusca which have already been figured and briefly described in the earlier accounts of the dredgings of the 'Investigator' by Messrs. Alcock and Wood-Mason. Of one of the species I have drawn up a detailed description, and of